

What is claimed is:

1. An unbalanced multi-block SBS copolymer with the following structure,

$mB1*S1-lB2-S2-sB3$,

wherein B is a butadiene block, S is a styrene block, l , m , s are relative size among

5 the blocks (i.e., large size, middle size and small size, respectively), and * is the tapered block between $mB1$ block and $S1$ block (i.e., the random copolymer part of a kind).

They also have to satisfy the following related expression.

a) $0.01/lB2 \leq mB1 \leq 0.5/lB2$ and $0.01mB1 \leq sB3 \leq 0.5mB1$

b) $0.5S1 \leq S2 \leq 1.5S1$

10 c) $5\% \leq * \% \leq 25\%$

In the related expression, the value of $B1$ and $S1$ include tapered block for the sake of convenience, and *% means the random styrene content in all the styrene in SBS.

2. The unbalanced multi-block SBS copolymer of claim 1, wherein the contents of styrene range from 20 to 50%.

15 3. The unbalanced multi-block SBS copolymer of claim 1, wherein the MI value of G type is 0.01 to 50 g/min.

4. The unbalanced multi-block SBS copolymer of claim 1, wherein the vinyl content ranges from 8 to 50%.

5. The polymerization method of the unbalanced multi-block SBS copolymer of claim 1
20 is comprised of the following steps.

a) Making $mB1*S1$ block containing tapered block by charging the hydrocarbon solvent, the first butadiene, and the first styrene together and using alkyllithium as an initiator and running the reaction;

b) Making $mB1*S1-lB2$ block by adding the second butadiene to the above $mB1*S1$
25 block;

- c) Preparing $mB1*S1-lB2-S2$ by adding the second styrene to the above $mB1*S1-lB2$; and
 - d) Making $mB1*S1-lB2-S2-sB3$ of claim 1 by adding the third butadiene to $mB1*S1-lB2-S2$.
- 5 6. The polymerization method of the unbalanced multi-block SBS copolymer of claim 1 is comprised of the following steps.
- a) Making $mB1*S1$ containing tapered block by charging the hydrocarbon solvent, the first butadiene, and a part of the first styrene together and by adding alkyllithium as an initiator, then charging the rest of the first styrene when all the
10 monomers are consumed and continuing the reaction;
 - b) Making $mB1*S1-lB2$ block by adding the second butadiene to the above $mB1*S1$ block;
 - c) Preparing $mB1*S1-lB2-S2$ block by adding the second styrene to the above $mB1*S1-lB2$; and
 - 15 d) Making $mB1*S1-lB2-S2-sB3$ of claim 1 by adding the third butadiene to $mB1*S1-lB2-S2$.